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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,312	02/05/2004	Kenneth L. Levy	P0930	5422
23735 7590 02/20/2008 DIGIMARC CORPORATION 9405 SW GEMINI DRIVE BEAVERTON, OR 97008			EXAMINER FUJITA, KATRINA R	
			ART UNIT 2624	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/774,312

Applicant(s)

LEVY ET AL.

Examiner

Katrina Fujita

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8 and 9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6 is/are allowed.
- 6) ☒ Claim(s) 1-5, 8 and 9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. This Office Action is responsive to Applicant's remarks received on November 28, 2007. Claims 1-6, 8 and 9 remain pending.

### ***Claim Rejections - 35 USC § 101***

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

3. Claims 9 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 9 defines a system comprising a watermark decoder. Looking to the specification on page 11, lines 22-27, the decoder can either be software, hardware or a combination of both. As a result, the claim is directed to software routines and is thus non-statutory. The examiner suggests amending the claims to be defined as computer-readable media embodying the computer program that perform the corresponding method steps. Any amendment to the claim should be commensurate with its corresponding disclosure.

#### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 8 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for encoding specific types of objects (e.g. ID cards), does not reasonably provide enablement for encoding any object under the sun commensurate with the full scope of the claim (e.g. a carpet fiber or a drop of water,

etc.). The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

6. The previous 112 second paragraph rejections of claims 8 and 9 have been withdrawn in light of Applicant's amendment.

### ***Specification***

7. The use of the trademark Outlook™ has been noted in this application on page 10, line 7. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

### ***Claim Objections***

8. The previous claim objection has been withdrawn in light of Applicant's amendment.

***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1, 5, 8 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Hayashi et al. (US 2001/0055390).

Regarding **claims 1 and 8**, Hayashi et al. discloses a method that includes encoding one or more content objects with a steganographic digital watermark (“embedding a digital watermark in image data” at paragraph 0001, line 2) and an object produced by the process of the encoding (figure 1, numeral w1), the encoding including embedding a collection of features (“registration signal” at paragraph 0093, line 2) that can be used to facilitate computation of geometrical distortion of the object after encoding, the geometric distortion including rotation (“geometric manipulation including rotation” at paragraph 0104, line 3), an improvement including step for making the collection of features resistant to attack (“providing resistance to geometric transformation” at paragraph 0005, line 2).

Regarding **claim 5**, Hayashi et al. discloses a method wherein said step includes obscuring said collection of features by designing same to become apparent only in an alternate domain (figure 4, numeral 0402).

Regarding **claim 9**, Hayashi et al. discloses a watermark detection system (figure 2) for decoding a steganographic digital watermark ("digital watermark extracting apparatus" at paragraph 0112, line 1) from an encoded object (figure 1, numeral w1), the encoding of the object including a template signal ("registration signal" at paragraph 0093, line 2) that aids in determining the corruption of the object, the corruption including rotation ("geometric manipulation including rotation" at paragraph 0104, line 3), the system comprising a watermark decoder adapted to detect the template signal without log-polar remapping (as seen in the details of the watermark extraction process in figures 2 and 60, the template signal is detected without log-polar remapping).

### ***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hayashi et al. and Macy et al. (US 6,707,926).

Hayashi et al. discloses the elements of claim 1 as described in the 102 rejection above.

Hayashi et al. does not disclose adding said collection of features in some of said objects, and subtracting said collection of features from other of said objects.

Macy et al. discloses a method that includes encoding ("encoding a template" at col. 6, line 43) one or more content objects ("rows or columns" at col. 6, line 67) with a steganographic digital watermark ("invisible watermark" at col. 2, line 19) wherein said step includes adding said collection of features in some of said objects ("adds the template to the next two rows or columns" at col. 7, line 1), and subtracting said collection of features from other of said objects ("subtracts the template from the first two rows or columns" at col. 6, line 67).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to utilize the addition and subtraction of features of Macy et al. in the improvement step of Hayashi et al. to provide a watermark that can be "used to determine the extent of scaling and/or shifting of the image" (Macy et al. at col. 5, line 37).

13. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hayashi et al. and Rhoads (US 6,266,430).



Hayashi et al. discloses the elements of claim 1 as described in the 102 rejection above.

Hayashi et al. does not disclose embedding said collection of features at a first scale in a first object, and embedding said collection of features at a second, different orientation in a second object.

Rhoads discloses a method that includes encoding one or more content objects with a steganographic digital watermark ("audio and video signal processing, and more particularly relates to the processing of such signals to embed auxiliary data" at col. 1, line 27) wherein said step includes embedding said collection of features at a first scale (figure 6, numeral 210) in a first object (figure 6, numeral 218), and embedding said collection of features at a second, different scale in a second object ("For each input sample (i.e. look-up table address), the table provides a corresponding 8-bit digital output word. This output word is used as a scaling factor that is applied" at col. 16, line 18).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to utilize the scaling of features of Rhoads in the improvement step of Hayashi et al. to provide a system with a "high degree of statistical confidence" (Rhoads at col. 19, line 55).

14. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hayashi et al. and Jones et al. (US 6,792,130).

Hayashi et al. discloses the elements of claim 1 as described in the 102 rejection above.

Hayashi et al. does not disclose that said step includes embedding said collection of geometrical features at a first orientation in a first object, and embedding said collection of geometrical features at a second, different orientation in a second object.

Jones et al. discloses a method in the same field of endeavor of digital watermarking ("method for embedding watermarks in digital image sequences" at col. 1, line 9) wherein said step includes embedding said collection of features (figure 7,  $C_1(X,Y)$ ) at a first orientation ("Different carrier images are then formed by spatially transforming 56...transformations can include, but are not limited to: rotations around the carrier image center at 90° increments" at col. 7, line 37) in a first object (first frame), and embedding said collection of features at a second, different orientation (figure 7,  $C_2(X,Y)$ ) in a second object (second frame).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to utilize the spatial transformation of Jones et al. to embed the registration signal of Hayashi et al. to "improve performance under certain types of removal attacks and/or allows for the amplitude of the watermark to be reduced to a lower level" (Jones et al. at col. 8, line 5).

***Response to Arguments***

Summary of Remarks (@ response page labeled 6): The 112 first paragraph rejection is traversed because the specification is enabled for some objects.

Examiner's Response: The claim was rejected for the reasons that the enablement was not commensurate with the scope of the claim. As pointed out in the rejection, not all objects can be subjected to the watermarking process and be successfully encoded. A carpet fiber could conceivably be encoded with a watermark. However Applicant's specification does not provide reasonable enablement for encoding a carpet fiber with their particular watermarking process. See MPEP 2164.08 regarding scope of enablement.

Summary of Remarks (@ response page labeled 6): The action does not consider 112 6th paragraph language for claims 1 and 6.

Examiner's Response: Yes and no. For claim 1, the "step for making" is defined by the limitations of claims 2-4, which were addressed in their respective rejections. Therefore, the 112 6<sup>th</sup> limitations were met in the previous Office Action. For claim 6, since it is clear that Applicant is invoking 112 6th for this claim, the Examiner has withdrawn the rejection. Claim 6 is further discussed below.

Summary of Remarks (@ response page labeled 6): Rotation is "not an 'attack' within the meaning of the claim."

Examiner's Response: The Examiner cited "providing resistance to geometric transformation" at paragraph 0005, line 2 in the Office Action as being "making the collection of features resistant to attack". The Examiner is not limiting the "attack" to rotation. The geometric transformation includes rotation but can be scaling as well.

***Allowable Subject Matter***

15. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record, in particular Wendt (US 6,865,273), does not teach the specific method steps of detecting the template signal without log-polar remapping as stated in claim 6 that are invoked by 35 U.S.C. 112 sixth paragraph, indicated in Applicant's remarks on page labeled 6. The specific steps not taught by the prior art are as follows:

"First, find local maxima on half of the Fourier magnitude array. Then use the 90-degree rotation symmetry of the template to eliminate most of the local maxima in a quadruple, where in this stage certain tolerance is added. Third, check each pair of the left maxima in the quadruple to see if the angle between them and the ratio of their radial distances to the origin make them a pair of points on our template or not. If they are, what scale factor and orientation angle of the template in this case. After running through the total of about 50 maxima (for 128

x 128 block), accumulated count on a particular orientation and scale factor will indicate what orientation and scale factor will indicate what the orientation and scale factor of the gird is when there is a template signal. A threshold is used to judge if there is a template signal or not." (found in the specification on page 4).

### **Conclusion**

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Wendt (US 6,865,273) is pertinent as disclosing a method and apparatus that detects a watermark that is resistant to certain geometric transformations.

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

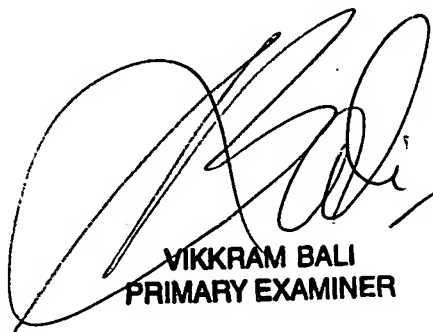
18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katrina Fujita whose telephone number is (571) 270-1574. The examiner can normally be reached on M-Th 8-5:30pm, F 8-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on (571) 272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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